

USSR

LAPIN, P. G., et al, Metallovedeniye i termicheskaya obrabotka metallov,  
No 2, 1972, pp 47-52

up to 600°C and alloying with Ni. The type of failure of the impact specimens may be changed from brittle to ductile with increased contents of Ni and Mo. High strength at both normal and low temperatures is achieved by alloying the steel with Ti and Mo. (4 illustrations, 2 tables, 1 bibliographic reference).

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USSR

UDC 669.28.001.5

GULYAYEV, A. P., MORGUNOVA, N. N., MALKHASYAN, N. M., Moscow

"Shock Viscosity and Brittleness Threshold of Molybdenum"

Kiev Problemy prochnosti, No. 8, Aug 71, pp 70-73

Abstract: The characteristics of the breakdown of molybdenum and the effect of geometric factors on this process are studied. It is noted that in addition to internal factors such as composition and structure, the brittleness threshold may also depend on external factors such as the cross section of the sample and the sharpness of a cut, and that there has been insufficient data characterizing the effect of external factors. The object of the study was the alloy TsM-2A (Zr -- 0.1%, Ti -- 0.13%, C -- 0.0037%, and the remainder Mo) in the shape of a bar of diameter 16 mm. The tests were conducted on metal deformed by rolling at 1200°C with a degree of deformation of 70% and recrystallized at an annealing temperature after deformation of 1500°C for 1 hr. Samples of cross section 10 × 10 mm were made from the rod with a cut of depth 2 mm and radii 1.0, 0.5, 0.25 and 0.1 mm. The brittleness threshold as determined on the basis of the shock viscosity for recrystallized molybdenum is higher than

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GULYAYEV, A. P., et al, Problemy prochnosti, No. 8, Aug 71, pp 70-73

deformed molybdenum (400-480 and 100-220°C, respectively). An increase in the sharpness of the cut did not change the temperature for the transition of molybdenum into the brittle state. Breakdowns occur across the sample in deformed molybdenum in the brittle state but in the transition temperature region a portion of the samples began to tear and another portion was bent. The fraction of the bent portion of the sample increased with an increase in temperature. The sharpness of the cut did not effect the relationship of the bent and broken parts of the cross section. The specific work expended on breakdown of wires was determined and it decreased with a drop in temperature and became close to zero at the lower brittleness threshold.

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USSR

UDC 669.14:620.172.2

GULYAYEV, A. P., LEBEDEV, D. V., OVSYANNIKOV, B. M., TIMOSHUK, L. T.

"Determination of Mechanical Characteristics of High Strength Steels in Extension"

Moscow, Zavodskaya Laboratoriya, Vol 37, No. 8, 1971, p 967-970.

Abstract: Problems are studied related to the necessity of supplementing existing All-Union State Standard GOST 1497-61 for estimation of the mechanical properties of high strength, low ductility steels ( $\sigma_B > 200 \text{ kg/mm}^2$ ). These additions concern both the norms for the technology of preparation of specimens, their surface condition, shape and size, as well as the techniques of preparation of machines for testing. The existing standard should be used for tensile testing of materials with strengths of less than  $200 \text{ kg/mm}^2$  and relative reduction in area greater than 15%. For high strength, low ductility materials, the characteristics produced by the standard method may be unreliable.

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USSR

UDC 669.292.5.017.12.620.193.41

VOROB'YEVA, L. P., DRUZHININA, I. P., GULYAYEV, A. P.

"Corrosion Resistance of 2-and 3-Component Vanadium Alloys in Boiling Solutions of Inorganic Acids"

Nauchn. Tr. N-i. i Projektn. In-t Redkomet. Prom-sti [Scientific Works of Scientific Research and Planning Institute for the Rare Metals Industry], 1971, Vol.32, pp. 168-174. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5 1705 by the authors).

Translation: The rate of corrosion of V and V alloys with Ti, Ta, Mo, and W in boiling solutions of hydrochloric, sulfuric, phosphoric, and nitric acids at various concentrations is determined. 5 figs; 1 table, 7 biblio refs.

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USSR

UDC 669.294.5.018.45

SELYANSKAYA, N. P., GULYAYEV, A. P.

"Laws of Hardening of Binary Alloys Based on Tantalum"

Dokl. XXX Nauchno-tekhn. konferentsii. Mosk. in-t khim. mashinostr. T. 2. vyp. 1  
(Reports of the Thirtieth Scientific and Technical Conference of Moscow  
Institute of Chemical Machine-Building. Vol 2. No 1), Moscow, 1970, pp 112-  
114 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 41785)

Translation: Nb, V, Ti, Zr, Mo, and W, which were added in the amount of 5, 10, 20, 30, 40, and 50 atomic % were used as the alloying elements. The greatest hardening is caused in Ta by Mo, W, and V, and then by Zr and Ti. Nb does not harden Ta in practice. The alloys containing Ti and Nb have good workability in the entire concentration range. The limiting Mo content (the strongest hardener) is less than 30 atomic %. Alloys containing 30 and 40 atomic % Mo were ruptured on deformation. The limit of satisfactory deformability of alloys with W lies at the content of 20 atomic % W.

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USSR

UDC 669.15.018.8:620.196.2

KOKIN, S. D., ZHADAN, T. A., and GULYAYEV, A. P.

"Ferritic Steel Susceptibility to Intercrystalline Corrosion and Embrittlement"

Dokl. XXX Nauchno-tekhn. konferentsii. Mosk. in-t khim. mashinostr (Papers Presented at Thirtieth Scientific and Technical Conference of Moscow Institute of Chemical Machinery), Vol 2, vyp. 1, Moscow, 1970, pp 115-118 (from RZh-Metallurgiya, No 3, Mar 71, Abstract No 3I581 by V. Olenicheva)

Translation: On the basis of intercrystalline corrosion (IC) susceptibility tests, hardness measurements, and metallographic analysis, a temperature-time dependence range of IC susceptibility is constructed for OKhl7T, Kh25T, and Kh28 steels, as well as the steel group with ~17% Cr and varying content of C (0.03-0.09%) and Ti (0.51-0.65%). The degree of Cr alloying affects the mechanical characteristics of the steels. At the same temperatures and with the same holding periods Kh25T and Kh28 steels have greater hardness and strength than OKhl7T steel. C and Ti content, as well as grain size, greatly affect the onset of IC and embrittlement susceptibility. Steel with a low C content (0.03%) is not prone to embrittlement. The IC susceptibility of ferritic steels disappears on repeated heating. One illustration. Bibliography with Two titles.

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Corrosion

USSR

UDC 669.784'24:620.193.41:669.15'24'26-194

GULYAYEV, A. P., and TOKAREVA, T. B., Moscow, Chemical Machine Building Institute

"Influence of Carbon and Nickel on Intercrystalline Corrosion of Austenitic Chrome-Nickel Stainless Steels"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 2, 1971, pp 29-37

Abstract: This work presents a study of chrome-nickel stainless steels of five groups with various carbon contents, containing 9, 12, 19, 30 and 40% Ni, with a constant chromium content of around 20%. It is demonstrated that an increase in the carbon and nickel content increases the tendency of chrome-nickel steels to intercrystalline corrosion, although steels with 40% Ni are less inclined to intercrystalline corrosion than steels with 30% Ni (with equal carbon content). Unstabilized chrome-nickel steels with 9-12% Ni containing not over 0.02% C or 19-40% Ni containing not over 0.006% C show practically no intercrystalline corrosion. A decrease in the content of carbon or nickel (the latter with low carbon content) causes a decrease in the temperature-time area of intercrystalline corrosion.

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GULYAYEV, A. P., and TOKAREVA, T. B., Metallovedeniye i Termicheskaya Obrabotka Metallov, No 2, 1971, pp 29-37

When comparing steels in the states of maximum tendency toward inter-crystalline corrosion, carbon increases the corrosion rate while nickel has a similar effect in steels containing up to 0.015% carbon. At higher carbon contents the effect is reversed. The depth of corrosion is decreased with increasing tempering temperature.

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USSR

UDC 669.14.018.252.3:669.25

GULYAYEV, A. P., and KUPALOVA, I. K., Central Scientific Research Institute of Ferrous Metallurgy; All-Union Scientific Research Institute of Instruments

"Effect of Cobalt on the Structure and Characteristics of High-Speed Steels"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 8, 1970, pp 34-43

Abstract: This article is a survey of work on the development of high-speed steels through the addition of cobalt to steel alloys. Cobalt was first used for this purpose in 1912, and since then the evidence has been accumulating that its use is indeed efficacious in toughening steel. A curve shows the relative cutting rates for three types of steel as a function of the percentage of cobalt content. The steels are 40Kh14Ni4V3, 38KhMYuA, and 50G, and the curves for all three are straight lines starting at the origin (zero Co %) and rising with a magnitude of slope of the order given. The cobalt content also affects other qualities of steel. In annealed steel, cobalt increases the HB hardness, increases the coercive strength  $H_c$ , increases the magnetic saturation  $4\pi I_s$ , increases the electrical  $1/2$

USSR

GULYAYEV, A. P., et al., Metallovedeniye i Termicheskaya Obrabotka Metallov, No 8, 1970, pp 34-43

resistivity  $\rho$ , reduces the residual magnetic induction  $B_r$ , reduces the maximum permeability  $\mu_{\max}$ , and slightly reduces the lattice parameters of  $\alpha$ -phase and carbides of  $M_6C$  and  $M_7C_3$ . It does not affect the diffusion of carbon in austenite, but at temperatures below  $950^\circ\text{C}$  it increases the diffusion coefficient of tungsten and consequently accelerates the conversion of the residual austenite during tempering.

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USSR

UDC: 539.37

GULYAYEV, A. P., and SARAKOVA, L. M., Moscow

"Effect of Carbon Content on the Plasticity of High-Speed Steel at High Temperatures"

Moscow, Izvestiya Akademii Nauk SSSR, Metally, no 6, Nov-Dec 70, pp 140-142

Abstract: The objective of the study was high-temperature plasticity of high-speed steel with various carbon contents. According to its content of alloying elements, the steel involved in the experiment was in line with R18 steel (0.23% Mn; 0.12% Si; 3.99% Cr; 17.76% W; 1.15% V; 0.1% Co; 0.4% Ni; 0.13% S; and 0.11% P. The carbon contents in the specific melts were 0.05%; 0.20%; 0.37%; 0.55%; 0.74%. The tests have shown that the normal increase in plasticity with an increase in temperature is disturbed in the presence of phase transformations. The narrower the phase-transformation ranges, the more pronounced the changes in plasticity. Dissolution of the excess phase leads to a reduction in plasticity; this reduction is greater with two metallic solid solutions  $\alpha$  and  $\gamma$ . High plasticity (superplasticity) was observed at about 800°C, the maximum temperature ever found for an alpha-solid solution for alloys with eutectoid transformations at 820-870°C.

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USSR

UDC 539.411.5

GULYAYEV, A. P., Central Scientific Research Institute of New Metallurgical Technology imeni I. P. Bardin

"Evaluating Steel Quality on the Basis of Impact Tests Results"

Kiev, Problemy Prochnosti, No 8, Aug 70, pp 48-51

Abstract: A study was made of ductile and brittle fractures of steels. The dependence of impact strength and its components and the nature of the fracture surface on temperature during impact tests was analyzed. The impact strength  $a_N$  is considered to be the sum of two components. The one,  $a_3$ , is the energy spent on elastic and plastic deformation before the occurrence of a crack; the other,  $a_p$ , is the energy required for plastic deformation during crack development. The  $a_3$  is the macro-plastic strain, while  $a_p$  is the micro-plastic strain in the crack opening. It is concluded that for correct evaluation of the structural strength of steels from the results of impact strength tests, the total energy of ductile fracture  $a_N$  must be determined. It can be determined by Drozdovskiy's method (sample with applied fatigue crack) or by the author's method (samples with various notches), which yield coinciding results.

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USSR

GULYAYEV, A. P., Problemy Prochnosti, No 8, Aug 70, pp 48-71

The cold brittleness threshold is determined by the percentage of fiber in the fracture or by the energy of crack development in the semi-brittle state related to the total energy of crack propagation,  $a_p/a_p \times 100 = \%B$ . Stress-strain diagrams, impact strength vs temperature, and other diagrams are included.

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USSR

UDC 669.15'24'26'28.001.5

GULYAYEV, A. P., SMIRNOVA, A. V., and USTIMENKO, M. YU.

"Influence of Aging on Properties, Structure, and Phase Composition of OKhN40MDTYu (EP543) Alloy"

Spetsial'nyye Stali i Splavy [Special Steels and Alloys--Collection of Works], No 77, Metallurgiya Press, 1970, pp 102-108

Translation: The influence of the temperature of the end of deformation and subsequent heat treatment on the structure and mechanical properties of EP543 high-strength corrosion-resistant alloy is studied. Investigation of the mechanical properties demonstrated that a decrease in the temperature of the end of deformation, cooling after deformation in air (catathermic aging), and additional isothermic aging lead to a significant increase in the strength properties of the alloy. 3 figures; 2 tables; 6 biblio. refs.

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USSR

UDC 669.017.1:539.56.001.5

GULYAYEV, A. P., VOLKOVA, M. A., VYSHVANYUK, I. M., KOZLOV, N. P., and MATSNEVA, YE. G.

"Mechanical Properties of 10GT Steel at Negative Temperatures and Influence of Imitated Welding Cycle on the Cold Brittleness Threshold"

Spetsial'nyye Stali i Splavy (Special Steels and Alloys -- Collection of Works), No 77, Metallurgiya Press, 1970, pp 181-187

Translation: It is established that the mechanical properties of all melts and shapes of 10GT steel studied, tested at  $-60^{\circ}\text{C}$ , satisfy the requirements of All-Union State Standard GOST 5781-61, while the impact toughness in the hot-rolled state at  $-60^{\circ}\text{C}$  is  $1,000-2,200 \text{ kJ/m}^2$  ( $10-22 \text{ kg}\cdot\text{m/cm}^2$ ).

The cold brittleness threshold of periodic profile No 16-32 of 10GT steel lies in the interval from  $-80$  to  $-100^{\circ}\text{C}$ . Fully viscous fracture of the steel occurs at room temperature.

The cold brittleness threshold of 10GT and St5 steels after a welding cycle is practically independent of preliminary heat treatment. The use of heat treatment for welded products is undesirable, since welding reduces its effectiveness. 2 figures; 1 table.

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USSR

UDC 620.17:669.14.018.298

DOGADAYEVA, V. A., GULYAYEV, A. P., ZIKEYEV, V. N., and FILIPPICHEVA, M. M.,  
Central Scientific Research Institute of Ferrous Metallurgy

"The Properties of 18Kh2N4VA Steel Made by Various Methods"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 10, 1970,  
pp 2-5

Abstract: This work presents a study of the properties of 18Kh2N4VA steel, melted in an open induction furnace with magnesite lining and after vacuum arc and cathode ray remelting. The vacuum arc remelting was performed on metal made by the open induction method, while cathode ray remelting was performed on metal produced in a vacuum induction furnace. The steel produced by vacuum induction melting with subsequent cathode ray remelting had reduced contents of oxygen and nitrogen, sulfur, tin, arsenic, antimony, and nonmetallic inclusions. The vacuum-arc remelted steel contained lower contents of oxide and sulphide nonmetallic inclusions than ordinary steel. The pure steels have a higher tendency toward grain growth, increasing with higher temperatures. The impact toughness of the vacuum induction + cathode ray remelted steel is approximately 2-3 times higher, although the  
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DOGADAYEVA, V. A., et al, Metallovedeniye i Termicheskaya Obrabotka  
Metallov, No 10, 1970, pp 2-5

cold brittleness threshold is the same for both types of steel. The increase in impact toughness upon remelting results from an increase in the work of crack development.

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USSR

UDC 669.017.1:539.56.001.5

ZIKEYEV, V. N., SKOTNIKOV, V. V., GULYAYEV, A. P., ABAKOV, V. T., and  
YELIZAROV, B. I.

"Study of Properties of Types 18KhNMFA and 18KhNIMFA Commercially Produced Experimental Steels"

Spetsial'nyye Stali i Splavy [Special Steels and Alloys--Collection of Works],  
No 77, Metallurgiya Press, 1970, pp 207-214

Translation: It is demonstrated that the production, rolling and heat treatment of types 18KhNMFA and 18KhNIMFA steels under industrial conditions cause no difficulties.

The experimental steels are superior in mechanical properties to type 15KhGNTA steel, used for important parts of motor vehicle engines. They have high brittle rupture resistance and hardenability. 2 figures; 3 tables.

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USSR

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GULYAYEV, A. P., Metallovedeniye, No 4, Apr 70, pp 51-55

alloys; reassessment of testing methods; static strength; resistance to brittle failure; combination of plastic deformation with phase transformations; composite materials; and computer technology controlling production quality, phase diagrams, oxidation, decarburization, internal residual stresses, etc. The prognosis for the 21st century covers the design of new equipment free of defects and failures through the use of optimum materials with determined properties, including materials featuring continuous growth to compensate for wear. Rock specimens brought from the moon will greatly contribute to knowledge and further progress. The moon, other planets, satellites, and the ocean will become a new source and even serve as sites for the manufacture of new metals and materials.

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USSR

UDC 001.18:669.017

GULYAYEV, A. P., Central Scientific Research Institute of Ferrous Metals im. I. P. Bardin

"The Future of Metals"

Moscow, Metallovedeniye, No 4, Apr 70, pp 51-55

Abstract: An overview is presented of the state of metals at the end of the 20th century and a prognosis is made for the middle of the 21st century. Developments in technology have been posing ever increasing requirements to new materials, primarily to metals. The time has long since passed when two dozen grades of metal are able to meet the demands of machine-building and other areas of technology. Today's nomenclature comprises tens of thousands of steels and alloys, each grade featuring a specific complex of properties which may be widely varied by heat treatment. Further developments in the new technology pose additional problems which cannot always be solved. The problems include new elements on Mendeleev's periodic table; plasticity of new metals; purity; new tantalum-, niobium-, rhodium-, tungsten-base

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1/2 038 UNCLASSIFIED  
TITLE--IMPACT TOUGHNESS TESTING OF STEEL -U-

PROCESSING DATE--27NOV70

AUTHOR--(02)-ASTAFYEV, A.S., GULYAYEV, A.P.

COUNTRY OF INFO--USSR

SOURCE--FIZ.-KHIM. MEKH. MATER. 1970, 6(1), 76-9

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--IMPACT STRENGTH, TOUGHNESS, ALLOY DESIGNATION, LOW ALLOY  
STEEL, METAL CRACKING, CRACK PROPAGATION, NUCLEATION, METAL BRITTLENESS,  
COLD SHORT, BRITTLE FRACTURE, MATERIAL FRACTURE/(U)18KG2AYU LOW ALLOY  
STEEL, (U)18G2AYU LOW ALLOY STEEL, (U)15G2S LOW ALLOY STEEL, (U)15KSND  
LOW ALLOY STEEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAHE--3001/0330

STEP NO--UR/0369/70/005/001/0076/0079

CIRC ACCESSION NO--AP0126086

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0126086

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. RESISTANCE OF STEEL TO BRITTLE FRACTURE IS GENERALLY DESCRIBED BY THE COLD SHORTNESS THRESHOLD AND THE IMPACT TOUGHNESS VALUE (ALPHA SUBT) THAT IS COMPOSED OF THE WORK REQUIRED FOR CRACK NUCLEATION (ALPHA SUBN) AND CRACK GROWTH (ALPHA SUBG). SOME OF THE PROBLEMS CONCERNING THE IMPACT TOUGHNESS TESTING OF STEEL WERE INVESTIGATED. THE MATERIAL USED WAS LOW ALLOYED HOT ROLLED AND NORMALIZED STEELS 15KSN0, 15G2C, 18G2AYU, AND 18KHG2AYU. BETWEEN ALPHA SUBT AND THE NOTCH RADIUS (R) THERE IS A LINEAR RELATION WHEN R EQUALS 0.1-1.0 MM. WITHIN THE TEMP. INTERVAL CORRESPONDING TO THE COLD SHORTNESS THRESHOLD, ALPHA SUBN SHOWS PRACTICALLY NO CHANGE WHILE ALPHA SUBG DECREASES ALMOST TO ZERO. CHANGE OF ALPHA SUBG DEPENDS UPON THE PER CENT OF THE DUCTILE COMPONENTS (FIBER) IN THE FRACTURE (PERCENT F) AND IS RELATED TO THE LATTER BY A SIMPLE CORRELATION PERCENT ALPHA SUBG EQUALS PERCENT F. R DOES NOT AFFECT THE POSITION OF THE COLD SHORTNESS THRESHOLD AND PERCENT F IN THE FRACTURE. DECREASING THE CROSS SECTION OF THE IMPACT TEST SPECIMEN DECREASES THE COLD SHORTNESS THRESHOLD, INCREASES ALPHA SUBN, AND DECREASES ALPHA SUBG. FACILITY: TSNII CHERN. MET. IM. BARDINA, MOSCOW, USSR.

UNCLASSIFIED

1/2 045 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--EFFECT OF AUSTENITIC GRAIN SIZE AND TEMPERING TEMPERATURES ON THE  
COLD BRITTLENESS OF STEEL -U-  
AUTHOR-(03)-SHERMAZAN, I.V., ZELENova, V.D., GULYAYEV, A.P.  
CCOUNTRY OF INFO--USSR  
SOURCE--METALLOVED. TERM. OBRAB. METAL. 1970, (3), 23-7  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--GRAIN SIZE, METAL BRITTLENESS, ALLOY DESIGNATION, ELECTRON  
MICROSCOPY, ALLOY COMPOSITION, IMPACT STRENGTH, MATERIAL FRACTURE,  
AUSTENITE, STEEL TEMPERING, LOW TEMPERATURE METAL, LOW TEMPERATURE  
EFFECT/(U)40KH CHROMIUM STEEL, (U)25KHGT CHROMIUM STEEL, (U)12KH2N4  
CHROMIUM NICKEL STEEL  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAmE--1997/0014 STEP NO--UR/0129/70/000/003/0023/0027  
CIRC ACCESSION NO--AP0119010  
UNCLASSIFIED



2/2 045

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0119010

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE STUDY WAS CARRIED OUT BY MEANS OF THE ELECTRON MICROSCOPE METHOD DESCRIBED BY G., ET AL. (1966). STEELS 12KH2N4, 25KHGT, AND 40KH (C 0.13, 0.25, 0.33; MN 0.60, 0.94, 0.58; SI 0.20, 0.22, 0.30; CR 1.46, 1.0, 0.98; NI 3.60, -, -, S 0.014, 0.014, 0.019; AND P 0.026, 0.026, 0.025 WT. PERCENT) WERE GIVEN VARIOUS KINDS OF TREATMENTS: (1) QUENCHED FROM 850DEGREES, (2) QUENCHED FROM 1200DEGREES, (3) TEMPERED AT 180DEGREES, (4) TEMPERED AT 500DEGREES. THEREAFTER IMPACT STRENGTH WAS DETD. AND FRACTURES WERE STUDIED UNDER ELECTRON MICROSCOPE AND THE ULTIMATE COLD BRITTLENESS WAS DETD. FOR LOW TEMP. TEMPERED STEELS BY OBSERVING THE APPEARANCE OF BRITTLE COMPONENT IN THE FRACTURE. WITH HIGH TEMP. TEMPERED STEELS THE ULTIMATE COLD BRITTLENESS WAS DETD. BY THE AMT. OF FIBERS IN THE FRACTURE. FRAGMENTATION OF GRAINS LOWERED THE COLD BRITTLENESS, WHILE THE TEMP. OF TEMPERING HAD NO EFFECT.

UNCLASSIFIED

Mechanical Properties

USSR

UDC 669.5'71:620.1

GULYAYEV, A. S., PROTASOVA, I. V. and SHAPOCHKIN, A. I.

"Study on the Superplasticity of TsAM 10-5 Alloy"

Moscow, Tsvetnyye metally, No 2, Feb 72, pp 58-60

Abstract: The study on the superplasticity of TsAM 10-5 alloy (5% Cu, 10% Al, up to 0.06% Mg, the balance--zinc) included the effect of the initial structure and the state of the treated alloy on its mechanical properties under static tensile tests within 200-350°C as well as changes in the alloy's microstructure during deformation under conditions of superplasticity. The alloy was tested as hot-extruded, hot-rolled, quenched and aged. In the process of superplastic flow the structure of the alloy appears to be almost identical in all cases and comprises a finely disperse mixture of phases with crystals measuring several microns. The TsAM 10-5 alloy exhibits its maximum tendency to superplasticity when its structure consists of finely disperse phases measuring several microns. An addition of magnesium increases the tensile strength of the alloy following its superplastic flow without affecting the superplasticity temperature interval. (2 illustrations, 1 table, 6 bibliographic references).

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Acc. Nr: **AP0046548**

Ref. Code: UR 0216

PRIMARY SOURCE: Izvestiya Akademii Nauk SSSR, Seriya  
Biologicheskaya, 1970, Nr 1, pp 43-54

F. F. LITVIN, B. A. GULYAYEV

THE SYSTEM OF AGGREGATED FORMS OF BACTERIAL PIGMENTS

*M. V. Lomonosov State University, Moscow*

Investigation of the structure of absorption spectra of green and purple bacteria as well as its changes in the course of pigment accumulation and action of agents disturbing their native state suggests that the peculiarities of the structure of the absorption spectra of live cells may be explained by the existence in vivo of several different forms of the pigments (bacterioviridin and bacteriochlorophyll). It was found that the structure of the spectra of the studied model system with aggregated pigments reproduces truly the structure of the spectra of corresponding pigments in the cell. The data obtained entitle one to think that the system of native pigment forms — chlorophyll

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analogous is represented by aggregates (polymer and crystalline formations). An estimation of the number of molecules in an aggregate, their respective distance and angles was carried out on the basis of the position of the maxima of the aggregates. A mathematical method of analysis of the spectra is proposed which permits to determine the fraction of absorption of every native pigment form and estimate approximately the respective pigments contents in a cell.

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USSR

UDC: 669.293.5

GULYAYEV, B. B., YAKOVLEV, V. T., VINNIK, P. G., MIKLUKHIN, D. Ye.

"Selection of Alloying Elements in the Development of Casting Alloys Based on Niobium"

Sb. Nauch. Tr. Tomsk. Inzh.-Stroit. In-t [Collected Scientific Works of Tomsk Institute of Construction Engineering], 1973, No 21, pp 3-11 (Translated from Referativnyy Zhurnal Metallurgiya, No 8, 1973, Abstract No 8I721, by L. Petrova).

Translation: A summarization is presented of existing state diagrams of binary systems of Nb-based alloys, and predictions are made for systems not studied. The analysis allows an estimation of the nature of the interaction of Nb with the elements and determination of their effects on increasing and decreasing the required properties of alloys being developed. 8 figures, 1 table, 9 biblio. refs.

1/1

1/2 009 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--ESTIMATION OF ERRORS IN MEASURING PHOTOSYNTHESIS INTENSITY BY GAS  
ANALYSIS -U-  
AUTHOR-(03)-GULYAYEV, B.I., MANUILSKIY, V.D., OKANENKO, A.S.  
COUNTRY OF INFO--USSR  
SOURCE--FIZIOL. BIOKHIM. KUL'T. 1970, 2(1), 34-40  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--PHOTOSYNTHESIS, GAS ANALYZER, CARBON DIOXIDE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY FICHE NO----FD70/605004/C08 STEP NO--UR/0654/70/002/001/0034/0040  
CIRC ACCESSION NO--AP0139623  
UNCLASSIFIED

2/2 009

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0139623

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE USE OF THE IR GAS ANALYZER IS RECOMMENDED FOR THE MOST ACCURATE DETN. OF PHOTOSYNTHETIC INTENSITY. IF THE DIFFERENCE BETWEEN CO SUB2 CONC. IN THE PHOTOSYNTHETIC CHAMBER AND OUTSIDE IT (DELTA CO SUB2) IS AS LOW AS 5 PPM, THE ERROR IN THE DETN. OF PHOTOSYNTHETIC ACTIVITY DOES NOT EXCEED 15PERCENT. THE ERROR IS LESS THAN 5PERCENT IF DELTA CO SUB2 IS HIGHER THAN 5 PPM. FACILITY: INST. PLANT PHYSIOL., KIEV, USSR.

UNCLASSIFIED

GULYAYEV, G.

SO:JPRS 53881  
23 AUG 91 P/S

IMPORTANCE OF CORRECT SEED CULTIVATION STRESSED

[Article by Professor G. Gulyayev, Director of the Scientific Research Institute for Agriculture of the Central Regions of the Nonchernozem Zone and V. Shibaev, Head of the Technology and Seed Cultivation Laboratory, Candidate in Agricultural Sciences: "Selected Seeds for Sowing", Moscow, Sel'skaya Zhizn', Russian, 13 August 1971, p 2]

AGRICULTURE

Vast areas of the nonchernozem zone are being used for winter crops. With the growth of agricultural expertise the yield of these areas is continually being increased. In recent years there has been an especially great increase in the winter wheat crop and now the amount obtained of this product is frequently the same as on the farms of the southern regions.

Continued improvement of the quality of seed grain and development and correct utilization of carry-over seed stocks should become an important source of increase of yield of winter crops in the nonchernozem zone.

As we know, the times of ripening and sowing of winter crops practically coincide in this zone and if there are no carry-over stocks on the farm, then the sowing is usually delayed. The plants which have been sown late are not able to put forth shoots normally, do not develop a good root system, and do not attain the necessary hardness. The shoots turn out choppy and weak and they suffer greatly from frost; in the spring their development is worse and their growth is retarded. Even if the winter crops ripen some time before the optimum sowing periods, all the freshly harvested seeds of this time are not enough to insure a sufficiently high yield. And it is obvious that in the short time from harvest to sowing they cannot attain postharvest ripening and they therefore have a reduced germination.

Everyone is fully aware of the importance of building up carry-over reserves of first-class seed, of processing them on schedule, and storing them until sowing time. And still many farms often do not have such reserves and, when they do exist, they often forget about the need for prompt preparation and about the quality of the seeds being laid in. As a result, a considerable portion of them becomes worthless at storage time and they cannot

agrimultime



USSR

UDC 621.373.826:550.3

GERMAN, A. I., SHULYAKOVSKIY, G. Ye., CHAYANOVA, E. A., GULYAEV, G. A., ZHURAVLEV, V. F., ZAKATOVA, T. M., and KHIAZ'KIN, V. V.

"Investigating the Effect of the Atmosphere on the Propagation of Coherent Radiation With the Wavelength of  $\lambda = 10.6$  Microns"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl. (Tenth All-Union Conference on the Propagation of Radio Waves; Report Theses--collection of works) "Nauka," 1972, pp 179-183 (from RZh--Radiotekhnika, No 10, 1972, Abstract No 10D361)

Translation: Results are given of experiments on the determination of the coefficient of attenuation in coherent measurements (wave of 10.6 microns) as it passes over the uniform ground surface in a range of about 8 km. The radiation source was a stabilized laser on an OKG-15 base, operating in single mode with an output power of 1.2-1.5 W. The radiation was modulated with a 1080 Hz frequency. A diagram of the relative angular distribution of the radiation was given, which permitted the divergence angle of the radiation and the zone of maximum signal level to be determined. All

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USSR

GERMAN, A. I., et al., V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl., "Nauka," 1972, pp 179-183

further measurements were made in this zone. The value of the attenuation factor is within the limits of  $0.03-0.08 \text{ km}^{-1}$  for clear weather, in the interval of  $0.03-0.2 \text{ km}^{-1}$  for light fog and drizzles, and in the range of  $0.5-0.6 \text{ km}^{-1}$  for heavy downpours. The proposed method for relative measurements of the attenuation factor gives a measurement error one-half that obtained in the absolute method.

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USSR

UDC 577.37+612.014.428

GULYAYEV, P. I., ZABOTIN, V. I., SHLIPPENBAKH, N. Ya., and GORDIYENKO, V. A.,  
Laboratory of Physiological Cypernetics, Leningrad State University

"Recording the Electric Fields of Insects in Free Flight"

Moscow, Doklady Akademii Nauk SSSR, Vol 191, No 3, 1970, pp 699-701

Abstract: A brief description is given of a screened metal chamber for recording the electric fields of bumblebees, wasps, flies, and mosquitoes. Results of studies of the insects in their natural habitat were the same as those obtained in the screened chamber, despite the absence of artificial conditions and the unlimited freedom enjoyed by the insects. Thus, the proposed screened chamber appears to be a convenient device for investigating triboelectricity and its possible informational role in insects.

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USSR

UDC: None

MALINOVSKIY, B. N., SIVACHENKO, P. M., GULYAYEV, V. A., PALAGIN, A. V., and YAKOVLEV, Yu. S.

"Digital Computing Device"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraboty, tovarnyye znaki, No 9, 1973, p 164, No 368605

Abstract: To improve the reliability of the digital device described in this patent, it is supplied with two logic circuit units each consisting of two logic cells for summation, modulo two and two logic OR cells. The switching cores of the cells direct the signal to recording and memory addresses. Other circuits in the assembly are described in some detail.

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Radiobiology

UDC 616.72-018.3-001.29-091

USSR

ZEDGENIDZE, G. A., MODYAYEV, V. P., GULYAYEV, V. A., and ANKINA, M. A.,  
Institute of Medical Radiology, Academy of Sciences USSR

"Structural Changes in Articular Cartilage After Irradiation"

Moscow, Meditsinskaya Radiologiya, No 3, 1972, pp 3-10

Abstract: Electron-microscopic and histochemical study of articular cartilage in rabbits revealed a greater heterogeneity of structure than expected. Of the seven structural zones distinguished (acellular, surface, transitional, isogenous groups, columns, hypertrophic cells, and primary calcification), those of the transitional and isogenous groups proved to be the most sensitive to a single dose (900 rad) of local gamma radiation. Within a day of exposure, cells of different sizes and shapes and empty lacunae appeared in these two zones. Vacuolization or wrinkling of the cytoplasm, irregular distribution of chromatin in the nuclei, and various stages of karyopyknosis and karyolysis were characteristic. These changes became increasingly pronounced until day 14 when all the zones were affected. Most of the changes were reversible and signs of restoration (proliferation of cells) began to appear about day 17 in the upper part of the cartilage. The regenerative process was completed by day 30 and the articular cartilage remained unchanged thereafter, but it looked "older" than the tissue of the control animals.

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USSR

GULYAYEV, V. A., <sup>1</sup>IVANOV, V. A., PALAGIN, A. V.

"Some Methods of Construction of Systems for Testing Control Automata Using Natural Redundancy"

Sistemy Avtomatich. upr. [Automatic Control Systems -- Collection of Works], Kiev, 1971, pp 58-63, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract No 3 V495 by O. Belkin).

Translation: Known methods of testing automata are based on the use of the properties of correcting codes. The specifics are studied of the design of systems for testing control automata based on potential elements consisting of register structures. The control circuits are based on the use of natural redundancy. The effectiveness of the use of these systems depends on the natural redundancy, structure of the signals tested, method of representation of signals, etc. In many cases, the use of circuits with natural redundancy is most effective.

Information Theory

USSR

UDC: 681.322

ALESHCHENKOV, V. B., GRIGORENKO, N. P., GULYAYEV, V. A., MATALIN,  
L. A., TISHECHKIN, A. S.

"Data Gathering System"

Moscow, Pribery i tekhnika eksperimenta, No 1, Jan-Feb 71, pp  
89-93

Abstract: The data gathering system is defined as the control of the parameters of a system under test through the accumulation of data with a minimal expenditure of human labor and in a form convenient for input to an electronic computer. The system considered in this paper is based on a switching analog-digital converter. Signals from various sensors feed into the switching device, which is directed by a control apparatus to select a single signal for input to the converter, and thence to a linearizer, a frequency meter, and a readout device in succession. The exchange of signal information among these blocks is indicated in an accompanying block diagram and is explained in the text together with an account of what happens inside each of the blocks.

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USSR

ALESHCHENKOV, V. B., et al, Pribory i tekhnika eksperimenta, No 1, Jan-Feb 71, pp 89-93

These blocks are also physically separate and are housed in two sections, one of which is equipped with a perforator and a digital printer. The system's technical specifications are listed in a short paragraph.

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USSR

GULYAYEV, V. A.

"Algorithms for Formal Selection of Optimal Testing Systems of Digital Control Machines"

Kibernet. i Vychisl. Tekhn. Resp. Mezhd. Sb. [Cybernetics and Computer Technology. Republic Interdepartmental Collection], 1972, No 18, pp 63-70 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V676, by the author).

Translation: An approach is presented to the selection of a general structure of the test system for a digital control machine -- systems for detection of errors, classification and elimination of errors and diagnostic testing. An algorithm is described for selection of a system of error detection, constructed using methods of solution of extreme problems on graphs.

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USSR

UDC 681.323(088.8)(47)

PALADIN, A. V., IVANOV, V. A., GULYAYEV, V. A., and SIVACHENKO, P. M.,  
(Institute of Cybernetics of the Ukrainian SSR Academy of Sciences)

"A Digital Control Automaton with Monitoring"

USSR Author's Certificate No 357563, kl G 06 f 11/08, filed 22 Jun 70,  
published 13 Dec 72 (from RZh Avtomatika Telemekhanika i Vychislitel'naya  
Tekhnika, No 10, Oct 73, Abstract No 10 B191 P)

Translation: The authors propose a digital control automaton with monitoring, containing memory circuits, connected with hybrid circuits and a flipflop output unit; logical circuits; and flipflops. The instrument is different in that the efficiency of monitoring is improved by dividing the flipflops of the output unit into small n-space groups, with the zero outputs of the output unit flipflops in each group connected to the inputs of the corresponding multi-input "AND" circuits.

The outputs of all the multi-input "AND" circuits are connected through inverters in pairs to the inputs of the dual input "AND" circuits, the outputs of which are connected to the inputs of "OR" circuits. The outputs of the "OR" circuits are connected to the input of the monitoring flipflop. The zero out-  
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USSR

PALADIN, A. V., et al., USSR Author's Certificate No 357563, Kl G 06 f 11/08, filed 22 Jun 70, published 13 Dec 72

puts of similar types of flipflops in the output unit of all groups are connected to the inputs of small n-input "AND" circuits, connected to the zero inputs of the recording flipflops, the outputs of which are connected to the inputs of a parity checking circuit.

The output of the parity checking circuit and the zero output of the monitoring flipflop are connected to the inputs of the output "AND" circuit connected to the zero input of the final flipflop. One of the outputs of the memory circuits is connected to the input of a correction flipflop, the outputs of which are connected to the inputs of the parity checking circuit. One illustration.

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USSR

UDC 681.3

GULYAYEV, V. A., IVANOV, V. A.

"Some Problems in the Testing of Digital Control Automata"

Kibernet. Tekhnika. Vyp. 6, [Cybernetic Equipment, No. 6--Collection of Works], Kiev, 1970, pp 14-21, (Translated from Referativnyy Zhurnal Kibernetika, No 5, 1971, Abstract No. 5V611).

No Abstract.

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USSR

UDC 681.3

MALINOVSKIY, B. N., GULYAYEV, V. A., SIVACHENKO, E. M.

"Testing Arithmetic Operations in a Modulo 2. Digital Control Computer"

Kibernet. Tekhnika. Vyp. 6, [Cybernetic Equipment, No. 6--Collection of Works], Kiev, 1970, pp 4-13, (Translated from Referativnyy Zhurnal Kibernetika, No 5, 1971, Abstract No. SV612).

No Abstract.

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USSR

UDC 533.6.013.42

VAYNBERG, D. V., GULYAYEV, V. I.

"Numerical Solution of Problems of Flow Over Bodies of Complex and Varying Form"

Tr. Koordinats. sovesch. po gidrotekhn. (Works of the Coordination Conference on Hydraulic Engineering), 1972, No. 64, pp 254-258 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3V388)

Translation: The problem of the interaction of a thin-walled shell with a liquid flowing around it is solved. Simultaneous solution of the equations of motion of the shell and the liquid is obtained by the finite difference method with the application of the methods of tensor analysis, making it possible to describe the geometry of the deformed medium in general form. The process of the formation of difference equations for plane and axisymmetric cases is programmed for the BESM-6 computer. Authors' abstract.

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USSR

UDC 539.3

VAYNBERG, D. V., GULYAYEV, V. I., CHIBIRYAKOV, V. K.

"Projection Method in the Theory of Shells and Its Computer Solution"

Soprotivl. materialov i teoriya sooruzh. Resp. mezhved. nauch.-tekhn. sb.  
(Resistance of Materials and the Theory of Structures. Republic Inter-  
departmental Scientific-Technical Collection), 1972, No. 18, pp 19-31 (from  
RZh-Mekhanika, No 3, Mar 73, Abstract No 3V131)

Translation: A method is given for reducing three-dimensional equations of  
elasticity theory to two-dimensional equations of the theory of shells. The  
resulting equations are free from simplifying static and geometric hypotheses  
of the classical theory of shells. 9 ref. Authors' abstract.

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USSR

UDC 621.643.34

GULYAYEV, V. N.

"New Criteria for Evaluation of the Tendency of Steel to Undergo Brittle Deformation"

Moscow, Teploenergetika, No 4, Apr 73, pp 69-71

Abstract: In addition to the ratio of yield stress to yield strength,  $\sigma_s/\sigma_B$ , used for the determination of brittle deformation of steels, the use of a gradual elongation parameter,  $\delta_p$ , is suggested. The resulting criteria,  $K_1$  and  $K_2$ , are:

$$K_1 = \frac{(\sigma_s/\sigma_B + 1) \delta_p}{2 \frac{\sigma_s}{\sigma_B} 0.2}, \quad \text{and} \quad K_2 = \frac{\delta_p}{\frac{\sigma_s}{\sigma_B} 0.2}$$

Both of these formulas can be used in computations, but the  $K_2$  criterion is more convenient because it contains the known ratio  $\sigma_s/\sigma_B$ . The use of a gradual elongation is justified by the fact that it characterizes the actual limits of a given metal with respect to its plastic properties. After reaching the yield strength (and consequently the  $\delta_p$ ), the ensuing deformation proceeds without any increase in stresses. Using the known values of  $\sigma_s$ ,  $\sigma_B$ ,  $\delta_p$ , and  $\psi$ ,  $K_1$  and  $K_2$  were calculated for 16GN and 22K steels (data are tabulated).

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USSR

GULYAYEV, V. N., Moscow, Teploenergetika, No 4, Apr 73, pp 69-71

Either criterion,  $K_1$  or  $K_2$ , can be used, provided a definite relation exists between them and other important characteristics of a metal. The application of  $K_1$  and  $K_2$  criteria to steels with  $\sigma_S/\sigma_B$  ratio exceeding 0.7 but with high plastic properties, will make it possible to use them for construction purposes. In order to judge the suitability of such steels, the minimal value of  $\delta_p$  should be determined from the  $\sigma_S/\sigma_B$  ratio. Examples of this calculation are given.

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USSR

UDC 621.181.021

GULYAYEV, V. N.

"Tests of Heat Resistance of Chrome-Manganese and Chrome-Manganese-Nickel Austenitic Steels"

Moscow, Teploenergetika, No 11, Nov 72, pp 79-80.

Abstract: In order to determine the resistance to sulfur and vanadium, the experimental steels were tested in an artificial corrosive medium consisting of 87%  $V_2O_5$  and 13%  $Na_2SO_4$ . The specimens were tested immersed to one-third height in the corrosive mixture and when fully immersed. All of the steels lost more mass when fully immersed. Selection of a steel for high-temperature parts of steam superheaters must be performed not only considering the heat resistance and technological properties of the steel, but also considering the heat resistance of the steel in the combustion products of the fuel (both main and reserve) to be used in the steam generating unit. Chrome-manganese austenitic steel can be recommended for high temperature superheaters burning sulfur-containing fuel oil. Chrome-manganese-nickel steels can also be used if the fuel burned is less corrosive.

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USSR

UDC 621.791.052.001.5:621.133.31

G  
GULYAYEV, V. N., Candidate of Technical Sciences, and KOZHELOVA, A. F., Engineer

"Investigating Butt Welds of Steam Pipes Made of Kh18N9 and Kh18N12T Steels"

Moscow, Svarochnoye Proizvodstvo, No 3, Mar 70, pp 14-15

Abstract: Butt welds of steam pipes made of Kh18N9 and Kh18N12T austenitic steels were investigated after two years in service. Two samples, cut in the longitudinal direction through the entire pipe thickness and containing butt welds were tested. The mechanical properties of butt welds determined at 20, 585, and 650°C and the hardness distribution along the various sections of the joint are given. Analysis showed that the strength of both joints was practically the same. Cracks did not appear in joints made of Kh18N9 steel, which does not contain carbide forming elements (titanium and niobium). Kh18N9 steel is preferable because the temperature ensuring the austenitic state of the butt welds can be varied between 1050 and 1125°C. The solution of the problem of cracks in butt welds should be sought by using steels with no carbide forming elements. Orig. art. has: 3 figures, 2 tables, and 2 references.

1/1

1/2 032 UNCLASSIFIED PROCESSING DATE--3000T70  
TITLE--AN INVESTIGATION OF WELDED JOINTS OF THE STEAM PIPES FABRICATED  
FROM KH18N9 AND KH18N12 STEELS -U-  
AUTHOR--(02)-GULYAYEV, V.N., KOZHEUROVA, M.F.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, SVAROCHNOYE PROIZVOODSTVO, NO 3, 1970, PP 14-16

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--STAINLESS STEEL, ALLOY DESIGNATION, WELD JOINT, NIOBIUM  
CONTAINING ALLOY, TITANIUM CONTAINING ALLOY, METAL CRACKING, DISSIMILAR  
METAL WELDING, BUTT WELDING, AUSTENITIC STEEL, CARBIDE, STEAM BOILER,  
STEEL PIPE/(U)KH18N12 STAINLESS STEEL, (U)KH18N9 STAINLESS STEEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1999/1300

STEP NO--0070135710/00070017/0147/0010

CIRC ACCESSION NO--AP0103299

UNCLASSIFIED

2/2 032

UNCLASSIFIED

PROCESSING DATE--10 OCT 70

CIRC ACCESSION NO--AP0123259

ABSTRACT/EXTRACT--(U) GP-0-- ABSTRACT. INVESTIGATED WERE BUTT JOINTS FABRICATED FROM AUSTENITIC STEELS, AFTER TWO YEARS OF THEIR EXPLOITATION. IT HAS BEEN ESTABLISHED THAT IN BUTT JOINTS FROM A1090 STEEL NOT CONTAINING CARBIDE FORMING ELEMENTS (TITANIUM AND NIOBIUM), CRACKS DO NOT OCCUR. THE OCCURRENCE OF CRACKS CAN ALSO BE PREVENTED IN THE COMPOSITE BUTT JOINTS KHI8N12T-KHI8N9 BY MEANS OF THEIR AUSTENITIZATION AT A TEMPERATURE OF 1125DEGREESC.

UNCLASSIFIED

1/2 015 UNCLASSIFIED PROCESSING DATE--0200T70  
TITLE--AN INVESTIGATION OF THE POSSIBILITY OF IMPROVING THE PROPERTIES OF  
A MN-CR-MO-V AUSTENITE STEEL FOR STEAM REHEATER PIPES -U-  
AUTHOR--(G2)--GULYAEV, V.N., TSYBINA, I.N.

COUNTRY OF INFO--USSR, CZECHOSLOVAKIA

SOURCE--LENGRAD, ENERGMASHINOSTROYENIYE, NO 3, 1970, PP 34-36

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--MANGANESE STEEL, CHROMIUM STEEL, MOLYBDENUM STEEL, VANADIUM  
STEEL, AUSTENITE STEEL, HEAT PIPE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1793/1743

STEP NO--09/0114/70/100/103/0034/003-

CIRC ACQUISITION NO--AP0114245

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--0200T70

272 015

CIRC ACCESSION NO--AP0114245

ABSTRACT/EXTRACT--(U) GP-Q- ABSTRACT. FOR PIPES OF THE OUTPUT SECTIONS OF THE STEAM SUPERHEATERS OF LARGE POWER INSTALLATIONS, IT IS FOR A NUMBER OF REASONS MOST EXPEDIENT TO USE AUSTENITE STEEL. HOWEVER, THIS COURSE OF ACTION IS TO A CERTAIN EXTENT HINDERED BY THE SCARCITY OF NICKEL. THEREFORE RESEARCH WAS CARRIED ON IN CZECHOSLOVAKIA IN SEARCH OF VARIOUS TYPES OF CHROME MANGANESE AUSTENITE STEEL. THE BEST STEEL TYPE PRODUCED BY THIS RESEARCH WAS AN MN-CR-MO-V STEEL OF A GIVEN COMPOSITION; THE COMPOSITION IS GIVEN IN THE ARTICLE. NEVERTHELESS, TEST SHOWED THAT THIS STEEL HAD SOME DRAWBACKS. IN ORDER TO ELIMINATE THE DRAWBACKS, A STEEL OF A NEW COMPOSITION WAS TESTED. THE STEEL WAS MELTED IN AN INDUCTION FURNACE WITH A CAPACITY OF 150 KG (MELT NO 341 WEIGHED 90 KG, THE INGOT WEIGHED 45 KG). NOWHERE IN THE ARTICLE IS THE COMPOSITION OF THE STEEL GIVEN. THE INVESTIGATION SHOWED THAT BY CHANGING THE COMPOSITION OF A MN-CR-MO-V STEEL IT IS POSSIBLE TO IMPROVE ITS SERVICE PROPERTIES SUBSTANTIALLY UNDER THE CONDITIONS OF THE OPERATION OF STEAM SUPERHEATING PIPES OF HIGH CAPACITY STEAM BOILERS.

UNCLASSIFIED

USSR

GULYAYEV, Yu. P.

"Approximate Method of Construction of Unloading Wave in Media with Delayed Flow Properties"

Nekotor. Zadachi Teorii Uprugosti o Kontsentratsii Napryazh. i Deformatsii Uprug. Tel. Vyp. 6 [Certain Problems of the Theory of Elasticity on Stress Concentration and Deformation of Elastic Bodies, No 6 -- Collection of Works], Saratov University Press, Saratov, 1971, pp 84-88, (Translated from Referativnyy Zhurnal, Mekhanika, No 4, 1972, Abstract No 4 V611 by Yu. V. Suvorova).

Translation: A method is studied for constructing the unloading wave in a semi-infinite rod, when the pressure at the end of the rod is an analytic function in the area of point  $t = t_0 > \tau$  (here  $t_0$  is the time corresponding to the beginning of the load,  $\tau$  is the flow delay time). It is assumed that the unloading wave in the area of point  $t = t_0$  can also be represented by an analytic function. Proof is presented by direct calculation of derivatives. Expressions are produced for the first three terms in the Taylor series and it is shown that the limiting values of derivatives  $d^k \epsilon / dt^k$  can be determined only by the boundary conditions.

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USSR

UDC 534.232.46-8

GULYAYEV, Yu.V., IVANOV, S.N., MANSFELD, G.D., PRCHLOV, V.V., STANKOVSKIY, B.A.,  
STEPANOV, B.G. [In-t radiotekhn. i radioelektron. AN SSSR--Institute Of Radio  
Engineering And Radio Electronics, AS, USSR]

"Ultrasonic High-Frequency Transducer"

USSR Author's Certificate No 250554, Filed 5 July 67, Published 16 Jan 70 (From  
RZh--Elektronika i yeye primeneniya, No 8, August 1970, Abstract No PA347P)

Translation: An ultrasonic high-frequency transducer patented for use in ultrasonic  
delay lines and ultrasonic amplifiers contains a resonator and a piezosemiconductor  
crystal involving a layer stripped of charge carriers. With the object of obtaining  
ultrasonic oscillations of ultra-high frequency, the piezosemiconductor crystal is  
connected with the central core of the resonator by a thin dielectric layer (e.g.,  
mica) and a controlled voltage source is connected to the central core of the  
resonator and to the crystal. 1 ill. L.K.

1/1

Electricity and Magnetism

USSR

GULYAYEV, Yu. V., ZIL'BERMAN, P. Ye., Institute of Radio Engineering and Electronics, Academy of Sciences USSR, Moscow

"Superheterodyne Amplification of Electromagnetic Waves"

Leningrad, Fizika Tverdogo Tela, No. 4, Apr 71, pp 955-957

Abstract: The possibility of heterodyne amplification of electromagnetic waves in a nonlinear medium is investigated. Superheterodyne amplification of ultrasonic waves was discussed in 1970 by the authors and it was noted then that this principle of superheterodyne amplification is applicable to other waves, such as electromagnetic. In this case, the medium should have the capacity for selective amplification of a weak wave of frequency  $\omega_i$ , where  $\omega_i$  corresponds to the maximum of the amplification. In the presence of a strong wave of frequency  $\omega_g$ , which plays the role of a heterodyne, the increment of growth natural to the frequency  $\omega$  is also transferred to the frequency of the signal  $\omega_s = \omega_g - \omega_i$ . The intensity of the wave  $\omega_g$  necessary for this effect is calculated. It is shown that this

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USSR

GULYAYEV, Yu. V., ZIL'BERMAN, P. Ye., Fizika tverdogo tela, No. 4, Apr 71,  
pp 955-957

intensity is sufficiently small, so that the parametric amplification of the signal can be neglected. The physical reason for this effect is the heterodyne action of the intense wave  $E_g$ , and due to the nonlinearity of the medium this wave after being displaced from the signal wave generates a wave at the frequency of the maximum amplification  $\omega_i$ . The latter is amplified and after interacting with  $E_g$  is again transformed into a signal.

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USSR

UDC 539.293:534.286.8

GULYAYEV, YU. V., KMITA, A. M., MEDVED', A. V., and MOROZOV, A. I., Institute of Radio Engineering and Electronics, Academy of Sciences USSR

"Ultrasound Photoabsorption in CdS and CdSe at Low Temperatures"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol 35, No 5, May 71, pp 889-894

**Abstract:** The article describes results of a detailed study of ultrasound photoabsorption in photoconductive CdS and CdSe crystals in relation to temperature, conductivity, and illumination intensity in the 2-50° K temperature range and 2-3 Hz frequency range. Experimental results show that the observed photoabsorption of ultrasound is due to the excitation of photoelectrons and their interaction with ultrasonic waves through the piezo effect but cannot be explained by sound absorption by free electrons. The most probable mechanism appears to be ultrasound absorption by electrons bound on small impurity centers -- absorption of the Debye dipole electric relaxation type. The authors thank S. G. KALASHNIKOV and I. A. VIKTOROV for discussing the work and V. N. FEDORETS for assisting in the measurements.

1/1

USSR

UDC: 621.315.992

PROKLOV, V. V., SHKBERLIN, G. N., and GULYAYEV, Yu. V.

"Diffraction of Electromagnetic Waves by Sound in Conducting Crystals"

Leningrad, Fizika i tekhnika poluprovodnikov, No 10, 1972, pp 1915-1918

Abstract: Currently, investigations are being conducted of the propagation of ultrasonics in semiconductors where the ultrasonic wave may be accompanied by a wave of electrons of concentrated or medium energy. A light wave, therefore, should undergo additional dispersion by such electron waves, and an investigation of such dispersion should provide valuable information on the structure of the electron bunches and their dynamics. For this reason, the authors of the present paper consider the diffraction of light by ultrasonics in semiconductor specimens and theoretically investigate it. For simplicity, they examine the case of nondegenerative isotropic semiconductors for which there are two possibilities: a collision plasma of free charge carriers; a noncollision plasma. Since the contribution of the second case is greater, the authors' attention is focused on it.

1/1

USSR

BACHININ, YU. G., GULYAYEV, YU. V.

"Nonlinear Theory of Ultrasound Amplification in Semiconductors in a Magnetic Field"

Leningrad, Fizika Tverdogo tela, Vol 15, No 4, 1973, pp 1026-1035

Abstract: The nonlinear theory of the amplification of an external ultrasonic wave by an electric current developed previously is generalized to the case where the sound-carrying crystal is placed in an external transverse magnetic field. The general expressions are obtained which describe the effect of the magnetic field on the local interaction of the electrons with the sound wave by means of which the problem of stationary amplification of the sound in the crystal of finite length is then solved. A study was made of the variation of the electric characteristics of such a crystal with an increase in the magnetic field and, in particular, the deformation of the volt-ampere characteristic of the sample. Under defined conditions, including a magnetic field optimizes the interaction of the electrons with the sound wave, and accordingly, it leads to improvement of the amplification conditions -- to a decrease in the current flowing through the crystal and an increase in the sound intensity at the crystal output under constant applied voltage.

A detailed study was made of the physical nature of the processes investigated here and, in particular, the concentration nonlinear effects were  
1/2

USSR

BACHININ, YU. G., et al., Fizika Tverdogo tela, Vol 15, No 4, 1973, pp 1026-1035

described by introducing the characteristic times of the problem and the corresponding parameters.

The investigated theory is strictly applicable only to the case of a monochromatic wave introduced into the semiconductor from the outside. However, the basic results should be applicable at least qualitatively to the investigation of amplification of the natural sonic vibrations of a semiconductor in a transverse magnetic field.

2/2

- 141 -

1/2 041 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--PHOTOABSORPTION OF ULTRASOUND IN CADMIUM SULFIDE AT LOW  
TEMPERATURES -U-  
AUTHOR--(04)-GULYAYEV, YU.V., KNITA, A.M., MEDVED, A.V., MOROZOV, A.I.  
COUNTRY OF INFO--USSR  
SOURCE--FIZ. TVERD. TELA 1970, 12(3), 690-9  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--PHYSICS  
  
TOPIC TAGS--ULTRASONIC ABSORPTION, CADMIUM SULFIDE, PHOTOCONDUCTIVITY,  
CRYOGENIC PROPERTY, ELECTRON CAPTURE, POTENTIAL WELL, TEMPERATURE  
DEPENDENCE, CRYSTAL IMPURITY, CRYSTAL DEFECT  
  
CONTROL MARKING--NO RESTRICTIONS  
  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1987/2005 STEP NO--UR/0181/70/012/003/0690/0699  
CIRC ACCESSION NO--AP0105079  
UNCLASSIFIED



2/2 041

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0105079

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ABSORPTION OF ULTRASOUND WAVES WAS INVESTIGATED IN PHOTOCONDUCTING CDS CRYSTALS AT 2.5-50DEGREESK AND AT 2.2-3.2 GHZ. THE ABSORPTION COEFF. CAUSED BY ILLUMINATION OF THE CRYSTAL CAN EXCEED BY SEVERAL ORDERS OF MAGNITUDE THE CORRESPONDING ABSORPTION COEFF. OF ULTRASOUND BY FREE ELECTRONS CALCD. BY THE LINEAR THEORY OF WYATT. THE OBSD. PHOTOABSORPTION OF ULTRASOUND DOES NOT HAVE A SINGULAR RELATION WITH THE INSTANTANEOUS COND. OF THE CRYSTAL OVER A WIDE RANGE. ON INCREASING TEMP. FROM HE TEMP. TO 20DEGREEK, THE PHOTOABSORPTION OF ULTRASOUND DECREASES APPROX. INVERSELY PROPORTIONALLY TO TEMP.; ABOVE 24DEGREEK AT CONDOS. SMALLER THAN 10 PRIME NEGATIVE6 OHM PRIME NEGATIVE1-CM PRIME NEGATIVE1, NO NOTICEABLE PHOTOABSORPTION WAS OBSD. THE DEPENDENCE WAS ALSO STUDIED OF PHOTOABSORPTION ON THE APPLIED CONST. ELEC. FIELD. AN EXPLANATION IS PROPOSED FOR THE EXPTL. DATA IN TERMS OF NOTIONS ABOUT CAPTURE OF ELECTRONS (PHOTOELECTRONS) IN SHALLOW POTENTIAL WELLS OF LARGE RADIUS DETO. BY THE PRESENCE OF IMPURITIES AND CRYSTAL DEFECTS. THESE ELECTRONS, BEING BOUND OR QUASI BOUND, DO NOT CONTRIBUTE TO THE STATIC COND. OF THE CRYSTAL, BUT CAN PARTICIPATE IN THE ABSORPTION OF ULTRASOUND BY INTERACTING WITH THE ALTERNATING ELEC. FIELD CREATED BY THE SOUND WAVE. IN ANALOGY WITH THE DEBYE THEORY OF DIPOLE RELAXATION INSOLIDS, AN ELEMENTARY THEORY WAS DEVELOPED OF SUCH ABSORPTION AND QUAL. COMPARISON WAS MADE WITH EXPT. FACILITY: INST. RADIOTEKH. ELEKTRON., MOSCOW, USSR.

UNCLASSIFIED

USSR

BUGAYEV, A. S.; GULYAYEV, Yu. V.; SHKERDIN, G. N. (Institute of Radio Engineering and Electronics, USSR Academy of Sciences, Moscow)

"A Theory of Acoustic-Electron Effects in Semiconductors with Hot Electrons"

Leningrad, Fizika Tverdogo Tela; September, 1970; pp 2654-9

ABSTRACT: A theory is developed for the interaction of classical ultrasound with electrons in semiconductors in which the relaxation time of the electron energy is comparable with the period of the sound wave (such a condition can take place in semiconductors with high mobility and small effective electron mass -- InSb, GaAs, etc. -- with low temperatures). It is shown that the well-known acoustic-electron effects here have a number of significant features. In particular, an electron temperature (or average electron energy) wave accompanying the sound wave and having the same frequency arises. This leads to a shift in the threshold of sound amplification; furthermore, the Weinreich relationship (Phys. Rev., 107, 317, 1957) does not hold. A constant positive correction to the electron temperature caused by the sound wave is found, and it is shown that under these conditions for a sound wave the electron gas can be heated as well as cooled.

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1/3 025 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--ON THE NONLINEAR THEORY OF ULTRASOUND AMPLIFICATION ON  
SEMICONDUCTORS -U-  
AUTHOR--GULAYEV, Y.V.  
COUNTRY OF INFO--USSR  
SOURCE--IEEE TRANS. SONICS ULTRASONICS USA, VOL. SU 17. NO. 2, P. 111-22  
APRIL 1970  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--PHYSICS  
  
TOPIC TAGS--NONLINEAR EFFECT, ULTRASONIC AMPLIFICATION, SEMICONDUCTOR  
PROPERTY, ULTRASONIC WAVE, DRIFT MOBILITY, ABSORPTION COEFFICIENT  
  
CONTROL MARKING--NO RESTRICTIONS  
  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1990/1356 STEP NO--US/0000/70/017/002/0111/0122  
  
CIRC ACCESSION NO--AP0109440  
UNCLASSIFIED

2/3 025

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0109440

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE NONLINEAR THEORY OF THE AMPLIFICATION OF ULTRASONIC WAVES OF ARBITRARY AMPLITUDE BY THE ELECTRIC CURRENT IN SEMICONDUCTORS IS DEVELOPED IN THE APPROXIMATION OF SMALL VARIATIONS OF AMPLITUDE, SHAPE, AND VELOCITY OF THE WAVE ON THE WAVELENGTH IN SPACE AND DURING THE PERIOD OF OSCILLATION IN TIME. THE GENERAL EQUATION IS DERIVED THAT DETERMINES SLOW VARIATION OF THE AMPLITUDE OF THE SOUND WAVE OF ARBITRARY SHAPE IN SPACE AND TIME, I.E., THE CONTINUITY EQUATION FOR SOUND FLUX. ALSO THE AVERAGE LOCAL DRIFT VELOCITY OF THE ELECTRONS AND THE AMPLITUDE DEPENDENT CORRECTION TO THE SOUND VELOCITY ARE CALCULATED. THE "NONLINEAR" SOUND ABSORPTION COEFFICIENT ENTERING THE CONTINUITY EQUATION, THE AVERAGE DRIFT VELOCITY OF THE ELECTRONS, AND THE NONLINEAR CORRECTION TO THE VELOCITY OF THE ELECTRONS, AND THE NONLINEAR CORRECTION TO THE SOUND VELOCITY ARE DIRECTLY CALCULATED IN THREE LIMITING CASES: (1) SMALL SOUND AMPLITUDE; (2) LARGE "OVERCRITICITY"; AND (3) LARGE SOUND AMPLITUDE. THEN THE CONVENIENT INTERPOLATION FORMULAS THAT ARE VALID FOR THE ARBITRARY AMPLITUDE OF THE SOUND WAVE ARE FOUND FOR THESE QUANTITIES. THE PROBLEM OF GENERATION OF HIGHER HARMONICS AT THE AMPLIFICATION OF A SOUND WAVE OF LARGE AMPLITUDE IS CONSIDERED. IT IS SHOWN THAT WITH THE GROWTH OF THE INTENSITY OF THE WAVE, THE MAXIMUM OF THE AMPLIFICATION COEFFICIENTS SHIFTS TO THE LOWER FREQUENCIES. WITH THE USE OF THE DERIVED CONTINUITY EQUATION FOR SOUND FLUX, THE DISTRIBUTIONS OF THE INTENSITY OF SOUND AND OF THE ELECTRIC FIELD ALONG THE SPECIMEN ARE FOUND FOR THE CASE OF STATIONARY SOUND AMPLIFICATION IN A SEMICONDUCTOR.

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3/3 025

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0109440

ABSTRACT/EXTRACT--IT IS SHOWN THAT IN A FINITE CRYSTAL THE NONLINEAR EFFECTS ACCOMPANYING THE SOUND AMPLIFICATION TAKE PLACE ONLY IN A RESTRICTED (BOTH FROM BELOW AND FROM ABOVE) REGION OF THE VOLTAGES ON THE SPECIMEN. ALSO, IT IS SHOWN THAT THE FINITE SPECIMEN UNDER SOUND AMPLIFICATION CONDITIONS MAY POSSES THE S SHAPED CURRENT VOLTAGE CURVE.

FACILITY: ACAD. SCI. USSR, INST. RADIO ENGINEERING AND ELECTRONICS, MOSCOW.

UNCLASSIFIED

USSR

UDC 621.315.592

GULYAYEVA, A. S., KRASYUK, V. A., MASLOV, V. N., and SAKHAROV, B. A., Corresponding Member of the Academy of Sciences USSR, State Scientific Research and Planning Institute of the Rare Metals Industry, Moscow

"Change of GaAs Single Crystal Photoluminescence in Regions Damaged by a Laser Beam"

Moscow, Doklady Akademii Nauk SSSR, Vol 205, No 4, 1972, pp 815-817

Abstract: The authors studied changes in the photoluminescence of GaAs single crystals with p- and n-type conduction and a carrier concentration of  $1 \cdot 10^{17}$  --  $3 \cdot 10^{17} \text{ cm}^{-3}$  in the regions damaged by a laser beam. The p-type Zn-doped samples were obtained by the Czochralski method; the n-type Te-doped samples, by the Czochralski and Bridgman methods. The samples were exposed to single light pulses of 500-microsecond duration from a laser with the active element of glass with neodymium,  $\lambda = 1.06 \mu$ . The absorption coefficient of the samples at this wavelength was  $\alpha = 1-3 \text{ cm}^{-1}$ . At a mean luminous flux density of  $\sim 5 \cdot 10^5 \text{ w/sq cm}$  the damage appeared on the sample face opposite

1/3

USSSR

GULYAYEVA, A. S., et al., Doklady Akademii Nauk SSSR, Vol 205, No 4, 1972, pp 815-817

the laser beam, probably as a result of local sample temperature elevation during the action of the laser pulse. The light source for studying the photoluminescence spectrum was a (He-Ne) laser with a wavelength of  $6328 \text{ \AA}$ . For each sample the emission spectrum was recorded in several places for both the damaged and undamaged areas of the sample.

The photoluminescence spectra for all samples at  $293^{\circ} \text{ K}$  had only one "edge" emission line with a peak of 1.43 ev, with the emission intensity of the damaged regions being only a third to a fourth of the emission intensity for the undamaged regions. The photoluminescence spectra of the p-type samples at  $77^{\circ} \text{ K}$  likewise had only one "edge" emission peak with an energy of 1.48 ev, with the intensity in the damaged regions about half that of the undamaged areas. The photoluminescence spectra of the n-type samples had peaks with energies of 1.51 and 1.23 ev respectively, with the "edge" luminescence intensity of the damaged regions decreasing about 50 to 60% and the intensity of the 1.23-ev peak increasing 1.5-2 times.

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USSR

GULYAYEVA, A. S., et al., Doklady Akademii Nauk SSSR, Vol 205, No 4, 1972, pp 815-817

To see if in all GaAs samples containing Te there is an increase in the intensity of the line with the 1.23-ev peak in laser-damaged areas, n-type samples underwent heat treatment at 800° C for six hours so as to introduce copper into them. The line with the 1.23-ev peak was found to disappear for samples containing copper.

The authors thank T. G. YUGOVA for carrying out the heat treatment of the samples.

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USSR

UDC 546.18'13:539.27

NAUMOV, V. A., ZARIFOV, N. M., and GULYAYEVA, N. A., Institute of Organic and Physical Chemistry Imeni A. Ye. Arbuzov, Acad. Sc. USSR, Kazan'

"Electronographic Study of the Molecular Structure of Phenyldichlorophosphine"

Moscow, Zhurnal Strukturnoy Khimii, Vol 13, No 5, Sep-Oct 72, pp 917-918

Abstract: Molecular structure of phenyldichlorophosphine was studied by the electronographic method. The data obtained indicated a symmetrical model for the molecule with the angle of rotation about the P-C bond  $\varphi$  being  $0^\circ$  and  $90^\circ$ . Further investigation showed that the rotation about that bond is hindered with the minimum angle at  $\varphi = 0$ . Evidently there is no conjugation between the  $\pi$ -electrons of the phenyl ring and the unshared electron pair of the phosphorus atom, which would tend to stabilize the configuration.

1/1

1978

RESEARCH, V. A. ~~XXXXXXXXXX~~ and M. A. ~~XXXXXXXXXX~~, Institute of Chemistry,  
Physical Chemistry Institute, U.S.S.R. Academy of Sciences, Moscow

"Electron-Transfer Reaction of the Structure of the H<sub>2</sub>O<sub>2</sub> Molecule -  
1,3,2-Dioxirane"

Moscow, Bulletin of the Academy of Sciences, 1978, No. 1, 280, 281-282

Abstract: The reaction of hydrogen peroxide with various substituted aromatic  
the P -- Cl bond of the peroxide group is broken, and the chlorine atom  
monomer, the reaction of the peroxide group with the substituted aromatic  
the intermediate product is the structure of the 1,3,2-dioxirane  
chlorine atom, which is the structure of the 1,3,2-dioxirane  
with two chlorine atoms, which is the structure of the 1,3,2-dioxirane  
synthetic this compound, the chlorine atom and the chlorine atom  
were obtained, the reaction of the peroxide group with the substituted aromatic  
in turn, the reaction of the peroxide group with the substituted aromatic  
and "peroxide" group, which is the structure of the 1,3,2-dioxirane  
torial reaction of the peroxide group with the substituted aromatic  
valence of the chlorine atom, the reaction of the peroxide group with the substituted aromatic  
were made with the peroxide group, the reaction of the peroxide group with the substituted aromatic  
1/0

USSR

NAUMOV, V. A., et al., *Aviatsiya i Kosmos*, Vol. 13, No. 3, 1976,  
pp 590-592

Distinct labeling of the P — G1 band length is apparently taken into account, for  
marked differences between several subgroups in this respect are being noted.

2/2

USSR

UDC 620.186:621.785.539

KIDIN, I. N., ANDRYUSHECHKIN, V. I., LEVTONOVA, N. M., and GILYAYEVA, V. M.  
Moscow Institute of Steels and Alloys

"Structure and Phase Composition of the Calorized Layer"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No. 2, 1971,  
pp 7-11

Abstract: The structure and phase composition of the layer formed by thermodiffusion calorizing of specimens heated in a furnace at rates of 0.1 and 10°/sec, and also electrically heated at 50 and 1000°/sec are studied. Results are presented from metallographic studies, X-ray phase and microroentgenospectral local analyses, and measurement of microhardness and thermal EMF of the layer. The dependence is established between the data produced by the various methods. The curve of the change in thermal EMF allows the concentration of aluminum in the layer and its phases to be determined. The influence of electric heating on the structure and phase composition of the calorized layer is demonstrated. Studies are performed for base specimens of Armco iron (0.05% C) and Kh5M steel (0.1% C); 4.42% Cr; 0.05% Mo). When calorizing was performed in a furnace from a vapor-gas phase with heating rates of 0.1 and 10°/sec at 950-1200°C with

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USSR

KIDIN, I. N., et al., Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 2, 1971, pp 7-11

holding from 1 minute to 8 hours, the layer formed consisted of two zones, an outer, brittle layer consisting of an ordered solid solution of FeAl, containing 18-33% Al, plus a thicker solid solution of aluminum at the base, going over to a superstructure of  $\text{Fe}_3\text{Al}$  when the aluminum content reaches 10%. Electric heating prevents formation of the outer brittle zone. The entire layer consists of a solid solution of aluminum in iron, with aluminum concentration only 18-20% at the surface.

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Foundry

USSR

UDC 669.185.1

NIKIFOROV, B. V., SMOKTIY, V. V., ~~GULIYEV, G. F.~~, ORLOV, V. S.,  
SIZENKO, A. S., SAFRONOV, YU. YA., KOLESNIK, V. D., BASHKAROV,  
YU. V., RUDNITSKIY, YA. N., FAYERSHTEYN, A. D., KAGAN, I. I.,  
Institute of Ferrous Metallurgy in Dnepropetrovsk and Krivoy  
Rog Metallurgical Plant

"Operating Experience With a 55-Ton Converter With Increased  
Blowing Rate"

Moscow, Stal', No 3, Mar 70, pp 215-218

Abstract: Metallurgists of the Institute of Ferrous Metallurgy  
in Dnepropetrovsk and Krivoy Rog Metallurgical Plant have  
developed a technique for smelting in 55-ton converters with  
the oxygen feed rate almost doubled from 2.8-3 to 5-6 cu m/t  
per minute. A new-type tuyere is used, the nose of which has  
two rows of concentrically arranged nozzles with independent  
oxygen feed to each row. The increased blowing rate improves  
slag formation. The yield of acceptable product and the degree  
of improvement in slag formation are determined by the struc-  
tural characteristics of the noses. Nose No. 5 was found to be  
1/2

USSR

NIKIFOROV, B. V., et al., Stal', No 3, Mar 70, pp 215-218

the most effective of all those tested. The use of a tuyere with nose No. 5 reduces the blowing time by 40 percent and increases converter productivity by 20.5 percent. Steels K St. 5sp, K St. 3sp, 35GS, K St. 5 ps, K St. 3ps, K St. Om, O8kp, 10kp, K2, K3, KExp., K3khr, T, and Sv-08A were obtained without any decrease in the yield of acceptable product, deterioration of metal quality, or decrease in refractory lining resistance. In newly designed shops provision should be made for a gas circuit capacity and oxygen feed system sufficient for the operation of converters with a blowing rate of 5-6 cu m/(t. min).

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Acc. Nr: **AP0047330**

Ref. Code: UR 0300

PRIMARY SOURCE: Ukrayns'kiy Biokhimichnyi Zhurnal, 1970,  
Vol 42, Nr 1, pp 86-91

PROPERTIES OF MUSCULAR ALDOLASE  
OF RABBITS UNDER CONDITIONS OF FASTING

L. T. Litvinenko, M. F. Guliy, M. I. Shevchenko, L. I. Golubeva

Institute of Biochemistry, Academy of Sciences, Ukrainian SSR, Kiev

Summary

The biological properties were studied of the crystalline aldolase isolated from muscles of the rabbits fastened for a long period of time.  $K_m$  and maximum rate of the reaction as well as the effect on the enzyme activity of urea taken in low concentrations and of para-chlormercurium-benzonate (*p*-CMB) were determined. It is shown that pH-optima of aldolase from muscles of the normal and fastened animals coincide.

When incubating with fructose-1,6-diphosphate (FDP) in trisacetic buffer two pH-optima (6.3 and 9.1) were found for the both enzymes by the chemical method and one optimum (8.0) by the optical one.

When incubating with fructoso-1-diphosphate (F-1-P) the optima pH (8.5 and 5.6) were determined by the chemical method in the norm and under conditions of fasting.

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Under optimal conditions a decrease of  $K_m$  is observed for the both substrates in aldolase of the fastened rabbits. In the presence of FDP an increase in the maximal rate of the aldolase reaction was established in the fastened rabbits, with F-1-P — a decrease.

After preincubation with urea the concentration of which was 0.5—3 M the aldolase activity of the fastened rabbits lowers sharply. The activity of aldolase in norm increases until the concentration of urea taken for preincubation does not exceed 1.5 M.

Fixation of sulphydryl groups by *p*-CMB does not provoke essential differences in the activity of aldolase of the fastened animals in comparison with norm.

The established differences in the biological properties of the muscular aldolase of the rabbits fastened for a long time is result of changes in its primary structure connected with the change in biosynthesis of this enzyme.

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19790854

Yeh

USSR

UDC 632.4:635.21

ZAKHAROVA, T. I., Candidate of Biological Sciences, and GULYUKINA, N. T.,  
Scientific Associate, All-Union Institute of Plant Protection

"Determination of Losses in the Potato Crop From Phytophthora Infections"

Moscow, Zashchita Rasteniy, No 2, 1971, pp 32-33

Abstract: Potatoes infected by this disease cannot be used for human consumption or planting; at best, they can be used as animal feed. Crop losses due to infection of the green tops of potato plants depend on the time at which the disease emerges, the course and intensity of the infection. The degree of Phytophthora infection over the years is subject to great variations. Data were collected on crop losses over the period of 1966-1969 for potato types from the Leningrad and Novosibirsk regions. Mathematical equations for loss calculations were derived. In the mean, a difference of only  $\pm 0.8-1.4\%$  was found between theoretical and experimental data.

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1/2 024 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--NONLINEAR PHENOMENA IN N GERMANIUM IN STRONG ELECTRICAL AND  
MAGNETIC FIELDS -U-  
AUTHOR-(03)-GULZMAN, N.G., LYUBIMOV, V.E., TSIDILKOVSKIY, I.M.  
COUNTRY OF INFO--USSR  
SOURCE--FIZ. TVERD. TELA 1970, 12(4), 1064-7  
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--GERMANIUM SEMICONDUCTOR, NONLINEAR EFFECT, ELECTRIC FIELD,  
STRONG MAGNETIC FIELD, CURRENT DENSITY, HALL CONSTANT, DRIFT MOBILITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--3002/0220

STEP NO--UR/0181/70/012/004/1064/1067

CIRC ACCESSION NO--AP0127831

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0127831

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN N-GE WITH THE ELECTRON CONCN.,  
N EQUALS 6.2 TIMES 10 PRIME14-CM PRIME3 AT 20.4DEGREE SK IN MAGNETIC  
FIELDS SMALLER THAN OR EQUAL TO 125 KOE AND ELEC. FIELDS SMALLER THAN OR  
EQUAL TO 60 V-CM, THE CURRENT VOLTAGE CHARACTERISTIC AND DEPENDENCE OF  
THE HALL CONST. ON C.D. WERE MEASURED. A JUMP WAS OBSD. IN THE VOLTAGE  
ON THE SPECIMEN, AS WELL AS A NEG. DIFFERENTIAL RESISTANCE AND ANOMALOUS  
DEPENDENCE OF THE DRIFT VELOCITY ON ELEC. FIELD. FACILITY:  
INST. FIZ. METAL., SVERDLOVSK, USSR.

UNCLASSIFIED

Genetics

USSR

KONONOVA, S. D., KOROLEV, A. M., YEREMENKO, L. T., and GUMANOV, L. L.,  
Institute of Chemical Physics, Academy of Sciences USSR

"Mutagenic Effects of Primary Alkyl Nitrates"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 5, Sep/Oct  
71, pp 762-763

Abstract: The mutagenic effects of methyl nitrate, ethyl nitrate, propyl nitrate, and butyl nitrate on the bacteriophage T4B E. coli were investigated by keeping the bacteriophage in 0.064 M solutions of the alkyl nitrates with a 0.2 M carbonate buffer at 27°C for up to 48 hours under constant stirring. The results were expressed as the number of r-mutations observed per 1,000 plaques. After 24 hours of exposure, the number of mutations was 5.6 in methyl nitrate, 0.4 in ethyl nitrate, 0.06 in propyl nitrate, 0.1 in butyl nitrate, and 0.1 in control tests. After 48 hours of exposure, methyl nitrate induced 14.5 mutations, thus considerably exceeding the mutagenic effect of N-nitroso-N-methylurea. The relative rates with which methyl, ethyl, and propyl nitrates entered nucleophilic reactions were calculated to be 9.1:1:0.1. It is concluded that these substances induce mutations by alkylating DNA molecules. The mutagenic effect decreases with increasing size of the alkyl in the alkyl nitrate. However the induced

USSR

KONONOVA, S. D., et al., Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya,  
No 5, Sep/Oct 71, pp 762-763

negative charge on the alpha carbon atom increases, preventing the radical  
from approaching the nucleophilic reagent.

2/2

USSR

UDC 547.963.3

BOYKOV, P. YA., and GUMANOV, L. L., Institute of Chemical Physics, USSR  
Academy of Sciences, Moscow

"Interaction Between T4B Bacteriophage DNA and Cell Membrane Structures"

Moscow, Molekulyarnaya Biologiya, Vol 5, No 3, May/Jun 71, pp 409-414

Abstract: The interaction of T4B bacteriophage DNA with cell membrane structures of E. coli B during intracellular development of the phages as well as the ability of phage DNA to form bonds with membrane structures in vitro was studied. Six minutes after phage DNA molecules penetrate the cell, they become attached to the cytoplasmic membrane. Then the DNA is duplicated, and finally the parent DNA is set free. The cytoplasmic membrane of one cell can bind approximately 20-25 T4B DNA molecules. Formation of bonds between DNA and the cytoplasmic membrane in vitro requires the presence of some soluble intracellular proteins in the culture medium.

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USSR

SHCHERBAKOV, V. I., SHEVCHENKO, N. A., NORENKO, N. P., and SUMANOV, L. L., Institute of Chemical Physics, Academy of Sciences USSR

"'Superinfection Proteins' of Phage T4B of Escherichia coli and the Pleiotropic Effect of the r1 Mutation"

Moscow, Doklady Akademii nauk SSSR, Vol 194, No 1, 1970, pp 208-210

Abstract: An E. coli B culture was infected with phage T4r<sup>+</sup> or T4r1 and, after 11 min, reinfected with T4r<sup>+</sup>. Samples taken 1 min after the first infection and every 2 min thereafter were transferred to test tubes containing 20 micro C of C<sup>14</sup>-hydrolysate of Chlorella protein. After 2 min of incubation, the sample was cooled in dry ice and the suspension precipitated by centrifugation. After certain other procedures, the supernatant was subjected to disk electrophoresis in a polyacrylamide gradient. The time at which the synthesis of most proteins began and ended was the same in both the mutant and the wild phage. However, in the late stages of the latent period, the r1 mutant contained radioactive proteins that were absent in cells infected with the wild phage. After infection of E. coli B under conditions preventing reinfection, or after superinfection during the late stages of the latent period, certain proteins could not be found. These proteins appeared only after repeated infection at the start of the latent period and only

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USSR

SHCHERBAKOV, V. I., et al, Doklady Akademii nauk SSSR, Vol 194, No 1, 1970,  
pp 208-210

when the cells were initially infected with the mutant. If the cells were initially infected with the wild phage, the proteins were not revealed by gel electrophoresis, regardless of whether the culture was reinfected. The process of superinfection is considered to be connected with the regulation of protein synthesis in infected cells. The superinfection proteins are apparently directly involved in the retardation of lysis.

1/2 009 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--DEWATERING OF PETROLEUMS FROM THE SANGACHALY DUVANNYI SEA DEPOSIT  
-U-  
AUTHOR--(04)--SULEIMANOV, A.B., MAMEDOV, KH.M., MAMEDOV, G.Z., GUMBATOV,  
G.G.  
COUNTRY OF INFO--USSR  
SOURCE--AZERB. NEFT. KHIOZ. 1970, (1), 32-4  
DATE PUBLISHED-----70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY, MATERIALS

TOPIC TAGS--PETROLEUM DEPOSIT, PETROLEUM DEHYDRATION, CRUDE OIL,  
GEOGRAPHIC LOCATION, MOLECULAR WEIGHT, PETROLEUM DEMULSIFICATION/(U)NCHK  
PETROLEUM DEMULSIFIER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3001/2071

STEP NO--UR/0487/70/000/001/0032/0034

CIRC ACCESSION NO--AP0127444

1000 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 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2421 2422 2423 2424 2425 2426 2427 2428 2429 2430 2431 2432 2433 2434 2435 2436 2437 2438 2439 2440 2441 2442 2443 2444 2445 2446 2447 2448 2449 2450 2451 2452 2453 2454 2455 2456 2457 2458 2459 2460 2461 2462 2463 2464 2465 2466 2467 2468 2469 2470 2471 2472 2473 2474 2475 2476 2477 2478 2479 2480 2481 2482 2483 2484 2485 2486 2487 2488 2489 2490 2491 2492 2493 2494 2495 2496 2497 2498 2499 2500 2501 2502 2503 2504 2505 2506 2507 2508 2509 2510 2511 2512 2513 2514 2515 2516 2517 2518 2519 2520 2521 2522 2523 2524 2525 2526 2527 2528 2529 2530 2531 2532 2533 2534 2535 2536 2537 2538 2539 2540 2541 2542 2543 2544 2545 2546 2547 2548 2549 2550 2551 2552 2553 2554 2555 2556 2557 2558 2559 2560 2561 2562 2563 2564 2565 256

2/2 009 UNCLASSIFIED PROCESSING DATE--230CY70  
CIPC ACCESSION NO--AP0127444  
ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. SANGACHALY DUVANNYI SEA PETROLEUM,  
D PRIME20 0.8834, MOL. WT. 254, VISCOSITY AT 20DEGREES 67.8 CST, CONTG.  
6.5PERCENT SILICA GEL TARS, 20PERCENT H SUB2 SO SUB4 TARS, 14PERCENT  
ASPHALTENES, 8-10PERCENT PARAFFIN M. 51DEGREES, 0.32PERCENT NAPHTHENIC  
ACIDS, 46PERCENT PARAFFINIC NAPHTHENIC HYDROCARBONS IN THE 62-85DEGREES  
FRACTION, 1PERCENT OF FRACTIONS B. IS SMALLER THAN OR EQUAL TO  
80DEGREES, AND ALK. WATER WITH SO SUB4 PRIME2 NEGATIVE HARDNESS WAS  
DEWATERED TO A H SUB2 O CONTENT OF 1-1.5PERCENT BY PUMPING IT THROUGH A  
TUBE FURNACE, ADDING 1.5PERCENT OF CA TYPE NCHK DEMULSIFIER AT  
75-80DEGREES, AND PUMPING IT INTO A SETTLING TANK WHERE A BOTTOM HEATING  
COIL PROLONGED THE SETTLING PERIOD AT TEMPS. IS GREATER THAN 51DEGREES.  
RECYCLING OF THE SEPD. WATER CONTG. DEMULSIFIER REDUCED THE OUTLAY OF  
NCHK.

UNCLASSIFIED

USSR

UDC 539.4.019.3

GUMEN, N. M., and PASHKOV, V. I., Khar'kov

"Effect of Heat Treatment on the Internal Friction of Cobalt Ferrite"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 5, Sep-Oct 72, pp 47-53

Abstract: The internal friction of cobalt ferrite was investigated in relation to the intensity of the longitudinal and lateral magnetic field, temperature, and mode of heat treatment. It was found that the magnitude of internal friction  $Q^{-1}$  depends to a significant degree on heat treatment. As a result of extended annealing and subsequent quenching from different temperatures, the state of the samples was fixed for which  $Q^{-1}$  differed by more than a factor of five. Magnetomechanical hysteresis makes the greatest contribution to the magnitude of  $Q^{-1}$ . Consequently, the relationship of  $Q^{-1}$  to  $T_q$  is determined mainly by the change in the magnetic properties of the ferrite (magnetostriction saturation and hysteresis constant). The relationships of  $Q^{-1}$  to  $T_q$  at  $H = 0$  and in fields corresponding to  $Q_{\max}^{-1}$  differ only as a constant term. Consequently, both magnitudes  $Q_0^{-1}$  and  $Q_{\max}^{-1}$  are determined by one and the same processes of change in orientation of magnetization vectors

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USSR

GUMEN, N. M., and PASHKOV, V. I., Fizika i Khimiya Obrabotki Materialov, No 5, Sep-Oct 72, pp 47-53

under the action of elastic stresses. For the temperature relationship of  $Q^{-1}$ , a discontinuity at  $T = -110^{\circ}\text{C}$  and a maximum at  $T = -40^{\circ}\text{C}$  were observed which should correspond to the anomalies of the magnetic properties of cobalt ferrite at the indicated temperatures. Four figures, 16 bibliographic references.

2/2

1/2 026 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--PHYSICOMECHANICAL PROPERTIES OF POLYFORMALDEHYDE DEPENDENT ON THE  
DIMENSIONS OF SPHERULITES AND CRYSTALLITES IN BULK -U-  
AUTHOR-(03)-GUMEN, R.G., KAZARYAN, L.G., KOVRIGA, V.V.

COUNTRY OF INFO--USSR

SOURCE--PLAST. MASSY 1970, (6), 40-4

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--POLYFORMALDEHYDE, SPHERULITE, PLASTIC FABRICATION, POLYMER  
STRUCTURE, PLASTIC MECHANICAL PROPERTY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3007/0731

STEP NO--UR/0191/70/000/006/0040/0044

CIRC ACCESSION NO--AP0136170

2/2 026 UNCLASSIFIED PROCESSING DATE--04DEC70  
CIRC ACCESSION NO--AP0136170  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DISTRIBUTION WAS DETD. OF  
SPHERULITE SIZES ON THE SURFACE AND IN THE INTERIOR OF POLYFORMALDEHYDE  
(I) SLABS OBTAINED BY MOLDING UNDER VARIOUS CONDITIONS. RAPID COOLING  
OF THE MOLD DECREASED THE SPHERULITE SIZE ON THE I SURFACE ONLY.  
OPTIMUM MECH. PROPERTIES WERE OBTAINED WHEN THE SPHERULITES HAD THE SAME  
DIMENSIONS ON THE SURFACE AS IN THE INTERIOR AND WERE SIMILAR TO 25 MU  
IN DIAM. THIS WAS ACCOMPLISHED BY LOWERING THE I MELT TEMP. BEFORE  
POURING INTO THE MOLD, RAPID POURING, HIGH MOLDING PRESSURE, AND LOW  
MOLDING TEMPS.

UNCLASSIFIED

Acc. Nr.: AM 0106711

Ref. Code: UR0000

Gumen, V. F.; Moskalev, V. P.; Smirnova, L. N.; Shmyreva, M. M.

Step Regulators for Programmed Control of Hydraulic Presses (Shagolyye regulatory dlya programmogo upravleniya gidropressami) Leningrad, Nauka, 1970, 82 pp (SL:2076)

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II	Synthesis of a System and Calculated Relationships for Elements of a Step Regulator	12
III	Step Drive of the Actuator of a Regulator	26
IV	An Example of Calculation of the Step Regulator Circuit	43
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Reel/Frame  
**19890033**

18



Acc. Nr.: AMC106711

The book deals with laws in control of extrusion rates of aluminum alloys on hydraulic presses. Given are methods for design and calculation of programmed regulators for realization of these laws, as well as comparative evaluations of methods for investigation of dynamic properties of systems with step motors...

Reel/Frame  
19890034

UDC 359.6

USSR

GUMENIK, L. I.

"Some Physiological Criteria of the Physical Condition of Ship Operators"  
Moscow, Voenno-Meditsinskiy Zhurnal, No 9, 1973, pp 61-62

Abstract: The pulse and respiratory rates were used as criteria for assessing the physical progress made by young ship operators in the course of their practice in special trainers designed to develop the ability to analyze and process information, form sensory skills in perceiving and evaluating visual signals, and form motor skills to be used in tracking. It was found that even in well-trained operators, the parameters under study corresponded to those in various specialists working under conditions of considerable stress, e.g., railroad dispatchers and power system operators, as well as in airline pilots and students while taking examinations. The pulse and respiratory rates increased during the training period over the baseline values and the pulse slowed afterward. The level of conditioning is to be judged not from the extent to which the pulse and respiratory rates diverge from the level observed during the initial training exercises but from the absolute values at any time in the training period by comparing the individual findings with the statistical means (given in a table included with the article).

1/2 022 UNCLASSIFIED PROCESSING DATE--11SEP70  
TITLE--TREATMENT OF HYPERTENSIVE PATIENTS IN AMBULATORY CONDITIONS -U-

AUTHOR--GUMENNAYA, N.A.

COUNTRY OF INFO--USSR

SOURCE--VRACHEBNOYE DELO, 1970, NR 3, PP 90-92

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--HYPERTENSION, RESERPINE, PROCESSED PLANT PRODUCT,  
CARDIOVASCULAR DRUG, CHEMOTHERAPY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1986/0968

STEP NO--UR/0475/70/007/003/0090/0092

CIRC ACCESSION NO--AP0102907

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--11SEP70

2/2 022

CIRC ACCESSION NO--AP0102907

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE AUTHOR REPORTS ABOUT PROLONGED TREATMENT OF HYPERTENSIVE DISEASE IN OUT PATIENT CONDITIONS BY MEANS OF ISMELIN (ISOBARIN) IN ASSOCIATION WITH DEPRESSIN AND RAUWOLFIA PREPARATIONS. PROLONGED, ALMOST UNINTERRUPTED TREATMENT PROVED EFFICIENT AND MADE IT POSSIBLE TO PREVENT CRISES.

UNCLASSIFIED